

Vegetable waste as a substrate for biosurfactant production by filamentous fungus *Fusarium* sp. LMM 5636 isolated from soil Amazon Region

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Abstract:

Human being has the need to mix water with insoluble substances in their daily activities and industrial. Surfactants derivates from petroleum has been used as this purpose, however, these practice has showed problems as toxicity and biodegradability. Biosurfactants synthesized by microbes are an alternative for these problems. Hence, it is expensive, partly due to the substrates that are used in bioprocesses. The aim of this study highlights the investigation to use vegetable waste as substrate for production of biosurfactants by the filamentous fungus isolated from soil samples in the Amazon region. In this work, were studied, tucuma peel (*Astrocaryum aculeatum* Meyer), peach palm peel (*Bactris gasipaes*), cupuaçu peel (*Theobroma grandiflorum* Schum) and banana peel (*Musa* sp.) as vegetable wastes. Thus, to the medium of submerged culture were used 40 g/L of each residue triturated. These wastes were filtered by infusion and then sterilized by autoclave. A fungal suspension of 1×10^4 cells/mL of the *Fusarium* sp. LMM 5636 was inoculated to this medium and the bioprocess occurred for 7 days at room temperature. To remove the fungi cells was carried out the filtration, then the fungal broths were analyzed for biosurfactant production, the response variable of this study was the emulsification index (% E24), which consisted in transfer 2 mL of the broth and 2 mL of a source of hydrocarbon (toluene) in screw-top tubes, mixing with a vortex for 2 min, and leaving to stand for 24 hours. Further, the procedure was performed in triplicate for statistical calculations. In this study the residual of tucuma peel showed a great emulsification index of 54.8% produced by the fungus. Besides the peel peach palm, cupuacu and banana emulsification index was 32.2%, 19.3% and 6.4%, respectively. Thus, all of these vegetable wastes show themselves as potential substrates for biosurfactant production as well.

Key words: bioemulsifiers, peel, ground.

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